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The Philosopher's Stone

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THE PHILOSOPHER'S STONE

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What Can Science Tell Us?

By Amanda Bartley

The answer, it seems, is everything. Science can tell us about the universe, about the interactions between objects, about ourselves, and as an added bonus can make accurate predictions about it all. As a result, science enjoys a rather high status in today's society. Scientists are viewed as heroes and experts whose opinions are valued on almost any topic. Scientific achievements and advancement are considered to be the paramount of human achievement. Is this so called "science worship" justified?

To most, the answer would appear to be yes. While not many would admit to "worship", most people view science as the ultimate authority on our views of reality. Science has obvious practical applications, such as the invention of new drugs or new ways to kill. But does this sense of workability or power to manipulate certain forces give science the authority to stake a claim on what is or is not "reality"?

To explore this question, it may be helpful to look a little closer at some of the tools used by science to arrive at its conclusions. I wish to focus on one of the most fundamental tools that science uses, that of reason.

Logically, reasoning may be split into two groups: deductive and inductive. Deductive reasoning works on a formal basis. If all of your premises are true and are arranged in the proper form, your conclusion must necessarily be true. Consider a classic example:

All men are mortal.
Socrates is a man.

Therefore, Socrates is mortal.

If it is true that all men are mortal and that Socrates is a man, it logically follows that Socrates is mortal. The particular content can be removed and put into a formula:

All A are B.
X is A.

Therefore, X is B.

Regardless of the content, the form of the argument still holds.

Inductive reasoning gets a little trickier. I drop my pencil and it falls to the ground. The last 100 times I have dropped my pencil it has fallen to the ground. Therefore, if I drop my pencil it will fall to the ground. Notice that an inductive argument cannot be put into a formula. While deduction consists of putting information into a formula and seeing if it fits, induction consist of taking observations or facts and arriving at general conclusion about it. This is the type of reasoning that science frequently uses. While inductive reasoning involves probability, not necessity, it appears to our common sense that it would be correct to reason this way. But does this mean that it is the correct way to reason?

One of the problems with inductive reasoning is pointed out by the Scottish philosopher David Hume. According to Hume, we make an assumption when we engage in deductive reasoning. This assumption is called the Uniformity of Nature, or the Principle of Induction. If I say my pencil will fall when I drop it because it has fallen the last 100 times I have dropped it, I am assuming that the future will be like the past. Likewise, when I see an object behaving a certain way, I assume that like objects will behave in similar ways under similar circumstances. Why is this? For Hume, the answer is that we think this way simply out of habit. If we get accustomed to seeing certain effects coupled with certain objects for a long enough time, we will start to think that there is some type of connection between the two events if there isn't one.

Because inductive reasoning is based on what we observe and experience and not on formal logic, there is no necessary logical connection between the premise and conclusion. Just because I experience my pencil behaving in a certain way repeatedly, what is

there to logically guarantee it will behave as it did in the past? Nothing. The most we can ever get out of inductive reasoning are varying degrees of probable connections.

It is highly probable that my pencil will fall, but not certain. This extends to causality as well. Because there are no necessary connections between objects, we can only know about their connections in a probable way. The same goes for objects that we do not observe. Since we are not observing them directly, we can only say with a degree of probability that they will behave in the same manner as the ones we are observing. Lastly, we can only make predictions about the future with degrees of probability, but not certainty. While Hume maintains that his skepticism of causality should remain an academic one and not interfere with everyday functioning, I have found that his thoughts can have a rather psychologically disturbing effect outside of the classroom as well.

Once I was on an airplane to Minnesota when the fellow next to me noticed I was reading a book on philosophy and asked me about it. Somehow our conversation turned to Hume and his discussion of causality. As I talked, I noticed him getting more and more nervous. Thinking that I was exposing someone to a new truth and possibly converting him to a life of philosophical contemplation, I became very excited. That is, until I remembered where we were. Amanda's Philosophical Rule #1: Never discuss Hume on an airplane -- 20,000 feet in the air is not the place one wants to question causality.

Hume's argument dealt a huge blow to science, arguably one that science is still recovering from. Hume had shown us that science cannot prove connections, can not give us universal principles, and can not make predictions about the future with absolute certainty. If this is true, then what exactly can science give us? If nothing else, science is practical. It has given us penicillin, computers, and a host of other important and useful items (as well as useless and dangerous items), seemingly regardless of its inability to make logically necessary conclusions about the world. But is science's only value in its practical consequences?

What science cannot do is teach us morals or what is means to be human, aside from morphology. These subjects are considered to be the domain of philosophy and the humanities. There is a long tradition of the perceived split between science and philosophy. Each has its specialized field of knowledge that is inaccessible to the other.

The problem of what science can or cannot do or even what it should or should not do, I believe, is the result of viewing science and philosophy as these two isolated disciplines. Consider two metaphysical positions, one held by philosophy and the other, while put into philosophical terminology, is affirmed by the sciences.

Biology, in particular evolutionary science, has a tendency to degrade into materialism and ignore the subjective side of experience. Those who do not ignore it recognize it either as produced by a complex chemical reaction within the body, or as unknowable given current technologies but eventually explainable. To many philosophers, it is naive of the scientists to think that they can explain subjective experience in objective terms. On the opposite end of the spectrum is idealism. This view is criticized by scientists and philosophers alike as being too unverifiable by scientific standards.

In both these cases, we only seem to be getting half of the picture. We engage both "philosophical" and "scientific" worldviews. Is there a way to heal the apparent split between the two? If this is possible, I believe that many problems in both philosophy and science would be resolved, and we would have a more comprehensive view of reality.

Please join us for our discussion on the role of science and philosophy in constructing our worldviews. We will meet in Gamble Hall, room 205 on Friday, November 21st at 12:30pm.

The vitality of thought is in adventure. Ideas won't keep. Something must be done about them. When the idea is new, its custodians have fervor, live for it, and if need be, die for it.

- Alfred North Whitehead

If you have any questions, criticisms, or comments, please contact either Amanda Bartley or Dr. Nordenhaug. Anyone interested in writing a brief article for *The Philosopher's Stone*, please contact either of us.

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